REMARKS

Claims 1-39 are presently pending in the application. Claims 1, 15 and 21 have been amended to clarify the invention. No new matter has been added and support for the amendments to the claims can be found in the specification and drawings. In view of the claim amendments and argument presented hereinbelow, Applicants respectfully submit that these claims are now in condition for allowance.

Claim Rejections -- 35 U.S.C. § 103(a)

Claims 1-39 stand rejected under Section 103(a) as being unpatentable over Ma et al. U.S. Patent No. 5,953,338 ("Ma") in view of Kato U.S. Patent No. 5,999,514 ("Kato"). Applicants respectfully traverse this rejection and submit that the combination of Ma and Kato fails to disclose or suggest the claimed invention.

In accordance with an aspect of the invention as set forth in representative independent claim 1, as amended, a method for providing a virtual private network service is provided. The method comprises the steps of:

> *establishing a hose for each of a plurality of endpoints of a virtual private network, wherein the hose does not reference another endpoint of the virtual private network at establishment*;
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> coupling the hose to endpoints associated with other hoses via routing paths in a network; and
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> allocating network resources to support communications between the hose and the other hoses. (Emphasis Added.)

The concept of a "hose" in accordance with the present invention, differs from conventional prior art point-to-point expedients for virtual private networks (VPNs). Specifically, the hose specifies aggregate traffic from an endpoint of the VPN to another of the endpoints of the VPN without referencing a specific endpoint in a point-to-point manner. As described in the specification with reference to Fig. 2:

> A hose 210-216 provides access to a VPN that is supported by the IP network 250. When associated with the same VPN, the hoses 210-216 are endpoints of the VPN. Thus, each of the customer networks 202-208 communicates via one hose 210-216 to any of the other endpoints (i.e., other customer networks 202-208 that are

also part of the same VPN). *Each hose 210-216 is specified by a service level agreements (SLA) without reference to other endpoints.* Once agreed, the VPN guarantees performance of the hose 210-216 independent of a type or destination of communication traffic of the hose 210-216 as long as the communication traffic remain within the SLA. *Thus a customer network 202-208 (or an operator of the customer network 202-208) need not specify performance for each of the endpoints that may be a destination.* Rather, the customer network 202-208 only provide the SLA for its hose 202-216 and the VPN performs the functions required to meet the SLA. Specification at page 4, line 25 – page 5, line 5.

Turning now to Ma, that reference discloses in Figs. 1A and 1B and in Col. 6, lines 29-42, a virtual private network 170 installed on an ATM network including a plurality of ATM edge switches 130A-130F. The ATM network connects multiple customer networks 110A-110K via the edge switches 130A-130F. As described in Ma:

> Preferred embodiments have a system-wide, centralized control module to manage these virtual paths and/or virtual channels. The control module is in direct communication with at least one ATM switch in the ATM network and in indirect communication with most, if not all, of the other ATM switches in the ATM network. The control module controls the provisioning of each ATM switch in the ATM network, which, among other things, enables the centralized control module to set up and dynamically change virtual paths and virtual channels as well as groups of virtual paths in an ATM network on an ongoing, continuous, real-time basis. The control module specifically has the ability to dynamically control the assigned parameters (e.g., bandwidth) of virtual paths, virtual channels, and groupings of virtual paths. Col. 3, lines 31-45
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> Preferred embodiments provide a number of advantages. Preferred embodiments manage an ATM switch dynamically and continuously, which allows for greater use of the available capacity of networks and, particularly, transmission facilities within a network. Preferred embodiments enable telecommunications companies that operate various types of networks for a multitude of clients to "lease" unspecified capacity on virtual paths in a virtual path group having certain features or parameters to other customers on an ATM backbone network, on an 'as needed' basis. Some of this capacity may, in fact, be owned by another party or already be leased to another party, but is not being used at the

> specific time that another party requests permission to use the capacity. Preferred embodiments thereby provide a technique of 'throttling' the physical interfaces needed to shape the bandwidth consumed by the overall ATM networks. The importance of this capability should not be underestimated, as it effectively allows carriers to 'over book' physical interfaces and transmission facilities (e.g., ATM links, ATM switches, and ATM networks) to ensure existing capacity will be used to the fullest extent possible. Col. 4, lines 13-33.

Ma fails to disclose or suggest a "*establishing a hose for each of a plurality of endpoints of a virtual private network, wherein the hose does not reference another endpoint of the virtual private network at establishment.*" The Examiner contends that Ma discloses "coupling the hose (130A) to endpoint (110K, 110J) associated with other hoses (130A, 130B, 130C, 130D, 130E, 130F) via the routing paths in a network (see figure 2, col. 3, lines 48-67). Applicants respectfully disagree. The edge switches 130A-130F are not "hoses" as claimed in the present invention. As set forth above, a hose specifies aggregate traffic from an endpoint of the VPN to another of the endpoints of the VPN without referencing a specific endpoint in a point-to-point manner. This is not an edge switch as asserted by the Examiner. The addition of Kato does not remedy the deficiency in the Ma reference.

Kato discloses a virtual path identifier (VPI) that is utilized as information for identifying a virtual path (VP) in an ATM switching system. As described in Kato:

> The VPI is determined to be a value unique to each of a plurality of virtual paths in a subscriber line, in order to identify each of the plurality of virtual paths in a single subscriber line which is a single physical line. The VPI is used as header information to be attached to an ATM cell (hereinafter referred to as a cell). It is used alone, or together with a virtual channel identifier (VCI), and identifies each of the plurality of connections in the single subscriber line. At the same time, the VPI is used to control routing of cells in a network.
>
> Also a virtual path connection identifier (VPCI) is used as other information for identifying a virtual path. Currently, a method called proxy signaling is popular as the signaling method for the above described SVC system. With this signaling method, one subscriber performs signaling on behalf of a plurality of

> subscribers, so that the other subscribers can make communications based on the signaling performed by the representative subscriber by using the SVC, without performing the signaling by themselves. In this case, the representative subscriber and the other subscribers form one group. It is one of the purposes of the VPCI that it is used as the information for identifying each subscriber and one or a plurality of paths belonging to each subscriber in a group which uses the proxy signaling. When a plurality of subscribers exist, a plurality of subscriber lines which are physical lines, which correspond to the plurality of subscribers, may sometimes exist as described above. Therefore, the VPCI may sometimes be determined to be a value unique to each path included in a plurality of subscriber lines corresponding to a plurality of subscribers belonging to a group which uses the proxy signaling, unlike the VPI. Note that a plurality of subscribers may sometimes be accommodated in a subscriber line which is a single physical line.

Kato does not disclose or suggest anything relating to a "hose" as claimed. Accordingly, it is respectfully submitted that the combination of Ma and Kato fails to reach the claimed invention.

In view of the above, Applicants respectfully submit that claims 1-39 are patentable over the combination of Ma and Kato, and allowance of these claims at an early date is solicited.

The Office is hereby authorized to charge any additional fees or credit any overpayments under 37 C.F.R. 1.16 or 1.17 to AT&T Corp. Account No. 01-2745. The Examiner is invited to contact the undersigned at (201) 224-7957 to discuss any matter concerning this application.

Respectfully submitted,
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